

Invited Lecture: University of Cambridge, England
Location: Cambridge, UK
Date: 2/28/2011

Title: "Exoplanets, Exo-Solar Life, and Human Significance"
Presenter: Jennifer Wiseman

Abstract:

With the recent detection of over 500 extrasolar planets, the existence of "other worlds", perhaps even other Earths, is no longer in the realm of science fiction. The study of exoplanets has rapidly moved from an activity on the fringe of astronomy to one of the highest priorities of the world's astronomical programs. Actual images of extrasolar planets were revealed over the past two years for the first time. NASA's Hubble Space Telescope is already characterizing the atmospheres of Jupiter-like planets in other systems. And the recent launch of the NASA Kepler space telescope is enabling the first statistical assessment of how common solar systems like our own really are. As we begin to characterize these "other worlds" and assess their habitability, the question of the significance and uniqueness of life on Earth will impact our society as never before. I will provide a comprehensive overview of the techniques and status of exoplanet detection, followed by reflections as to the societal impact of finding out that Earths are common, or rare. Will finding other potentially habitable planets create another "Copernican Revolution"? Will perceptions of the significance of life on Earth change when we find other Earth-like planets? I will discuss the plans of the scientific community for future telescopes that will be able to survey our solar neighborhood for Earth-like planets, study their atmospheres, and search for biological signs of life.

(Non-sensitive, publicly available scientific information only, non-ITAR)